

REMARKS

The application has been amended and is believed to be in condition for allowance. This amendment is provided as part of a Request for Continued Examination ("RCE").

Amendments to the Disclosure

Claims 22, 24, and 33 are amended to overcome the Official Action's formal objections.

Claim 22 is also amended to overcome the Official Action's formal rejection in view of 35 USC 112, first paragraph, as further detailed below.

Claims 21, 25, and 34 are further amended to more sharply recite the additional pressure as a "localized" pressure, the localized pressure being exclusive to a particular area of the glass panel along the score line; the amendments find support in the specification and the drawing figures as originally filed (e.g., Figures 1-2; page 2, lines 5-9 and 14-17; page 3, lines 4-7). Claim 30 is also amended to more sharply recite the spring of the pressing tool; this amendment finds support in the specification and the drawing figures as originally filed (e.g., Figure 1; page 5, lines 11-13).

Claims 21-27, 29-30, and 31-34 are further amended to address antecedent basis issues, typographical issues, and formal issues in consideration of U.S. practice and preferences. In particular, the claims are amended to

associate the support plates with reference character (2) and not (11), as provided by the specification and the drawing figures as originally filed.

Additionally, the terms "split" and "splitting" of claims 21, 25, and 34, and the term "breaking" in claims 21 and 34, are amended as "dividing" in order to be consistent with the specification as originally filed (page 5, lines 16-17; originally filed claims).

A "clean" listing of the amended claims, absent amendment markups consistent with 37 CFR 1.121, is provided in the Appendix of this amendment for the Examiner's convenience.

No new matter is introduced by way of the foregoing amendments to the claims.

Formal Matters - Objections to the Claims

The Official Action objected to claims 22, 24, and 33 due to informalities in the claim language.

In response, claims 22 and 33 are amended in a manner believed to overcome the Official Action's objections. Withdrawal of the objections to the claims is thereby respectfully solicited.

Formal Matters - Section 112, first paragraph

The Official Action rejected claims 22 and 24 under 35 USC 112, first paragraph as failing to comply with the written description requirement. The Official Action objects to the recitation "wherein pressure is exerted on the glass

panel (10) via a breaking strip (4), a direction of the pressure exerted by the breaking strip (4) being opposite to a direction of a force exerted on the glass panel (10) by the suction devices (5)", stating that support is provided for the breaking strip applying pressure in the downward direction, and that the force exerted on the glass panel by the suction devices is also in the downward direction.

In reply, claim 22 is amended, as indicated above, to overcome the Official Action's rejection under 35 USC 112, first paragraph. In particular, claim 22 is amended to recite a suction force exerted on the glass panel by the suction devices acting in a direction opposite a direction of the first pressure exerted via the breaking strip.

As provided by the drawing figures and the specification as filed (e.g., Figure 1; page 2, lines 2-5 and 10-12; page 3 line 21 to page 4 line 1), the glass sheet in the area of its scored line is held down on either side of the scored line as pressure is applied to the side opposite the scored line.

For example, suction heads 5 located underneath the glass sheet 10 are exposed to a negative pressure so that the glass sheet 10 is held in the area of the two rows of suction heads 5 on either side of the gap 3. Therefore, as the lifting strip 4 is raised uniformly over its entire length, the suction heads 5 hold down the glass sheet 10 at either

side of the gap 3 against the upward movement of the lifting strip 4.

Hence, the suction force exerted on the glass panel 10 by the suction devices 5 in Figures 1 and 2 acts in a direction opposite a direction of the first pressure exerted by the breaking strip 4.

Accordingly, it is respectfully submitted that claim 22, as amended is supported by the specification and the drawing figures of the application as originally filed. Withdrawal of the rejection under 35 USC 112, first paragraph is thereby respectfully solicited.

Substantive Issues - Sections 102 and 103

The Official Action rejected claims 21-25, 32 and 34 under 35 USC 102(b) as being anticipated by European Publication EP 1 334 953 (hereinafter EP '953).

The Official Action rejected claim 28 under 35 USC 103(a) as being unpatentable over EP '953. The Official Action states that EP '953 discloses a linear motor at element 8 of the Figures therein, or in the alternative, that official notice is taken that such linear motors are well known in the art, as well as other equivalent devices providing "various well known benefits including desirable maintenance benefits."

The Official Action rejected claims 26-27, 29-31, and 33 under 35 USC 103(a) as being unpatentable over EP '953.

The rejections are respectfully traversed for at least the reasons that follow.

As to claims 21 and 34, the Official Action contends that EP '953 teaches a device wherein every step of the claimed method is performed.

Applicant respectfully disagrees. There is no teaching or suggestion in any of the cited references, individually or in combination, of a localized pressure exerted upon a glass sheet.

For example, amended claim 21 requires a step of exerting a localized second pressure, on two portions of the glass panel (10) respectively on two opposite sides of the score line (11), exclusively in an area on the surface of the score line (11) at only one end of the score line (11). None of the cited references, individually or in combination, teach or suggest this feature.

On the contrary, EP '953 teaches a glass-breaking system comprising a table 2 and a crushing bar 4 configured to be raised through a gap to apply pressure upon a surface of a glass sheet 3 along the length of a scored line 26 etched in an opposite surface of the sheet 3 (Figures 1-3, 14-16).

According to EP '953, a sheet of glass is broken by causing the crushing bar 4 to press against the surface of the glass sheet 3 so that the opposite surface of the glass sheet, with the scored line 26 etched in it, "bulges" outward until

the glass sheet 3 meets a second apparatus configured to resist the continued growth of the bulge (paragraph [0032]; Figures 1-3).

In one embodiment, the second apparatus is a pair of compressor rod mechanisms 8 (e.g., springs or gas-filled supports) each with compressor rod borders 9 attached to extended linkages 10 (Figures 1-3). Even after the bulge of the glass sheet meets the compressor rod borders 9, the bulge continues to grow as the compressor rod borders rise up against a downward force exerted by the compressor rod mechanisms 8 (paragraph [0032]). The bulge continues to grow until the compressor rod mechanisms reach their end stops (paragraph [0039]; Figure 3) whereupon the continued force exerted by the crushing bar 4 suddenly acts only upon the glass sheet between the two compressor rod borders 9. The final breaking of the glass sheet occurs as a result of this abrupt change (increase) in the moment applied across the scored line 26 of the glass sheet (paragraph [0039]).

The other embodiments of EP '953 act similarly. A second embodiment substitutes the compressor rod mechanisms 8 with suction devices 15 (paragraphs [0033], [0039]; Figures 10-13). A third embodiment includes both compressor rod mechanisms 8 and suction devices 15 (paragraph [0041]; Figures 14-16).

Hence, the essential mechanism of EP '953 is a crushing bar to apply a first pressure along a center of a glass panel (with a scored line etched therein), and resistive force applicators situated on either side of the center. The first pressure from the crushing bar causes the glass sheet to bulge until the resistive force applicators act to abruptly apply a second pressure opposed to the first pressure upon the glass panel and halt the growth of the bulge while the crushing bar continues to forcibly press upward (paragraph [0039]). The glass panel breaks because the force of the crushing bar is abruptly concentrated between the resistive force applicators (i.e., a sudden moment increase) along the length of the scored line 26 (paragraph [0039]).

EP '953 fails to make any teaching or suggestion of a second, opposing pressure that is localized to just a portion of the score line. Claim 1, for example, requires that the second pressure on either side of the score line 11 be exclusively in an area on the surface of the score line 11 at only one end of the score line 11.

See, for example, Figure 2 of the present application. Pressing tool 20 is provided only at the terminal end of the score line 11, such that any pressure exerted by the fingers 21 of the pressing tool 20 (Figure 1) would be applied only at two points of the glass pane to either side of the terminal end of the score line 11.

In stark contrast, EP '953 teaches each of its rod borders 9 as running the entire length of the crushing bar 4 and parallel to the crushing bar 4 (paragraph [0032]). For example, Figures 4-6 which illustrate side views of the EP '953 apparatus, wherein the rod border 9 is longer than the glass sheet 3 itself.

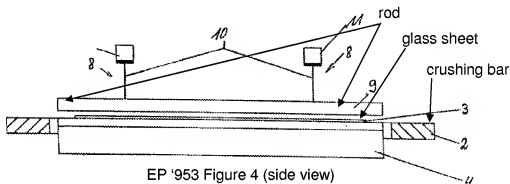


Figure 4 of EP '953 is provided above for the Examiner's convenience. As can be readily seen, a pressure applied by the rod border 9 is not localized, but is instead applied across an entire length of the glass sheet 3.

Likewise, the alternative embodiment of EP '953 teaches a plurality of suction devices 15 arranged adjacent to and along the recess 5 (paragraph [0033]). The function of the suction devices 15, along with the piston devices 18 and springs 20, is the same as for the rod borders 9 running the length of the crushing bar 4 (paragraph [0034]), and are preferably arranged parallel to and to either side of the cutting line 26 (paragraph [0036]). There is no teaching or

suggestion of the suction devices being arrange to apply a localized pressure to the glass sheet.

Hence, EP '953 teaches a method wherein pressure is applied evenly across the length of a bottom surface and a top surface of the glass panel. EP '953 makes no teaching or suggestion of any application of force exclusively to a localized area, such as at one end of the score line.

In addition, it is respectfully submitted that EP '953 fails to teach or suggest the steps recited in claim 21 and 34 as to pre-stressing by way of the first pressure step, and subsequently exerting a localized second pressure to divide the glass panel.

On the contrary, as stated above, EP '953 continuously applied pressure from the crushing bar 4 until the glass breaks.

Based at least on the foregoing reasons, it is respectfully submitted that EP '953 fails to teach or suggest all the features required by amended claim 21. Accordingly, it is respectfully submitted that claim 21 is patentable.

There is also no teaching or suggestion in EP '953 or any of the other cited references of a pressing tool 20 configured to exert a localized pressure exclusively upon two localized areas of the surface of the glass panel, the two localized areas respectively located at first and second sides

of the score line and proximate to one terminal end of the score line, as required by claim 25.

As indicated above, both the suction devices 15 and the compressor rods 8/rod borders 9 exert an even pressure across an entirety of the length of the glass sheet 3 (e.g., Figures 4-6). There is no disclosure in either the drawing figures or the specification teaching or suggesting an apparatus exerting a localized pressure exclusively upon a localized area of the glass panel.

Accordingly, it is respectfully submitted that EP '953 fails to anticipate claim 25.

Independent claim 34 is patentable over the cited references at least for the reasons set forth above as to claims 21 and 25.

It is further respectfully submitted that claims depending from independent claims 21, 25, and 34 are patentable at least for depending from a patentable parent claim.

For example, it is respectfully submitted that EP '953 fails to teach a linear motor configured to adjust a pressing tool in a normal direction perpendicular to the support surface, and further that one of skill would have had no motivation to modify EP '953 to include such a device.

As indicated above, EP '953 operates such that the crushing bar 4 presses upward against the glass, and then also

upon the rod borders 9 connected to the compressor rod mechanisms 8, which are disclosed as springs or other mechanisms to absorb and resist force. A motor does not achieve this. Hence, the proposed modification would render EP '953 unsatisfactory for its intended purpose.

It is also respectfully submitted that a linear motor was not known in the art as recited in dependent claim 28. The Official Action concedes that EP '953 fails to teach the feature recited therein. Therefore, should the present rejection be maintained, Applicant respectfully requests that the Office provide findings of fact (e.g., a prior art reference or an affidavit) to provide support on the written record for the Official Notice taken with respect to this claim.

Reconsideration and allowance of the claims are respectfully requested.

From the foregoing, it will be apparent that Applicant has fully responded to the July 10, 2009 Official Action and that the claims as presented are patentable. In view of this, Applicant respectfully requests reconsideration of the claims, as presented, and their early passage to issue.

In order to expedite the prosecution of this case, the Examiner is invited to telephone the attorney for Applicant at the number provided below if the Examiner is of

the opinion that further discussion of this case would be helpful in advancing prosecution.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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APPENDIX:

1-20. (canceled)

21. (currently amended) A process for dividing a glass panel (10) along a score line (11) provided across a surface of the glass panel (10), comprising the steps of:

clamping the glass panel (10) on both of two opposite sides of the score line (11) provided on the surface of the glass panel (10);

exerting a first pressure on an opposite surface of the glass panel (10), the opposite surface being opposite the surface provided with the score line (11), the first pressure applied along an entire length of the score line (11); and

exerting a localized second pressure on two portions of the glass panel (10) located respectively on the two opposite sides of the score line (11) and exclusively in an area on the surface of the score line (11) at only one end of the score line (11),

wherein the glass panel (10) is pre-stressed by the exerting of the first pressure step, the glass panel becoming curved and the surface with the score line becoming convex during said exerting of the first pressure step, and

wherein the dividing of the pre-stressed glass panel (10) is subsequently triggered along the score line (11) by the exerting of the localized second pressure step.

22. (currently amended) The process according to claim 21,

wherein suction devices (5) clamp the glass panel (10) in the clamping step, the suction devices being loaded with underpressure, and

wherein the first pressure is exerted on the glass panel (10) via a breaking strip (4), and a suction force exerted on the glass panel (10) by the suction devices (5) acts in a direction opposite a direction of the first pressure.

23. (currently amended) The process according to claim 21, wherein the second pressure is exerted with a pressing tool having two fingers (21) pressing down on the pre-stressed glass panel (10) exclusively in the area of the surface at only the one end of the score line (11).

24. (currently amended) The process according to claim 22, wherein the first pressure exerted by the breaking strip (4) is a constant pressure over an entire length of the score line (11).

25. (currently amended) A device for dividing a glass panel (10) along a score line (11) formed on a surface of the glass panel (10), comprising:

support plates (2) forming a support surface for supporting the glass panel (10), the support plates (2) having a gap (3) running along an area between the support plates (2);

clamping devices (5) for holding the glass panel (10), the clamping devices (5) provided in an area proximate to the gap (3) between the support plates (2);

a breaking strip (4) provided in the gap (3) for applying a first pressure to the glass panel (10) along the score line (11); and

a pressing tool (20) configured to exert a localized second pressure exclusively upon two localized areas of the surface of the glass panel, the two localized areas respectively located at first and second sides of the score line and proximate to one terminal end of the score line.

26. (currently amended) The device according to claim 25, wherein the pressing tool (20) is fork-like with two fingers (21) directed toward the support plates (2) to exert the second pressure upon the two localized areas.

27. (currently amended) The device according to claim 26, wherein a free end of each of the fingers (21) is equipped is with a part (25) made of an elastic material.

28. (previously presented) The device according to claim 25, further comprising:

a linear motor (23) configured to adjust the pressing tool (20) in a normal direction (30) perpendicular to the support surface (2).

29. (currently amended) The device according to claim 28, wherein the pressing tool (20) is configured to pivot about a joint (24) on a piston of the linear motor (23).

30. (currently amended) The device according to claim 29, further comprising:

a spring (26) configured to urge the pressing tool (20) toward a neutral orientation about the joint (24) wherein a crosspiece (22) connecting the two fingers (21) is aligned horizontally with the support surface of the support plates (2).

31. (previously presented) The device according to claim 26, wherein the fingers (21) of the pressing tool (20) are fastened in an adjustable manner to an arm (22).

32. (currently amended) The device according to claim 25, wherein the clamping devices (5) comprise suction devices (5).

33. (currently amended) The device according to claim 25, wherein the pressing tool (20) is adjustable in a direction of the gap (3) between the support plates (2).

34. (currently amended) A method for dividing a glass panel (10) along a score line (11) provided across a surface of the glass panel (10), comprising the step of:

dividing a glass panel (10) along the score line (11) of the glass panel (10) using a device comprised of,

support plates (2) forming a support surface for supporting the glass panel (10), the support plate (2) having a gap (3) running along an area between the plates (2),

clamping devices (5) provided proximate to the gap (3) between the support plates (2) for holding the glass panel (10),

a breaking strip (4) provided in the gap (3), and

a pressing tool (20) configured to exert a localized pressure exclusively upon two localized areas on the surface of the glass panel (10),

wherein the dividing step further comprises the sub-steps of:

securing the glass panel (10) by clamping the glass panel (10) at both of the first and second opposite sides of the score line (11) with the clamping devices (5);

exerting lengthwise pressure via the breaking strip (4) on a surface of the glass panel (10) opposite to the surface with the score line (11), the lengthwise pressure applied to the opposite surface along an entire length of the score line (11); and

exerting the localized pressure via the pressing tool exclusively upon the two localized areas of the surface of the glass panel (10), the two localized areas respectively on the two opposite sides of the score line (11) and in a portion of the surface of the of the glass panel (10) at only one end of the score line (11),

wherein the glass panel (10) is pre-stressed by the exerting lengthwise pressure step, the glass panel becoming curved and the surface having the score line becoming convex during said exerting lengthwise pressure step, and

wherein the dividing of the pre-stressed glass panel (10) is triggered along the score line (11) by the exerting of the localized pressure step subsequent to the exerting of the lengthwise pressure step.